

APPENDIX A

Maps

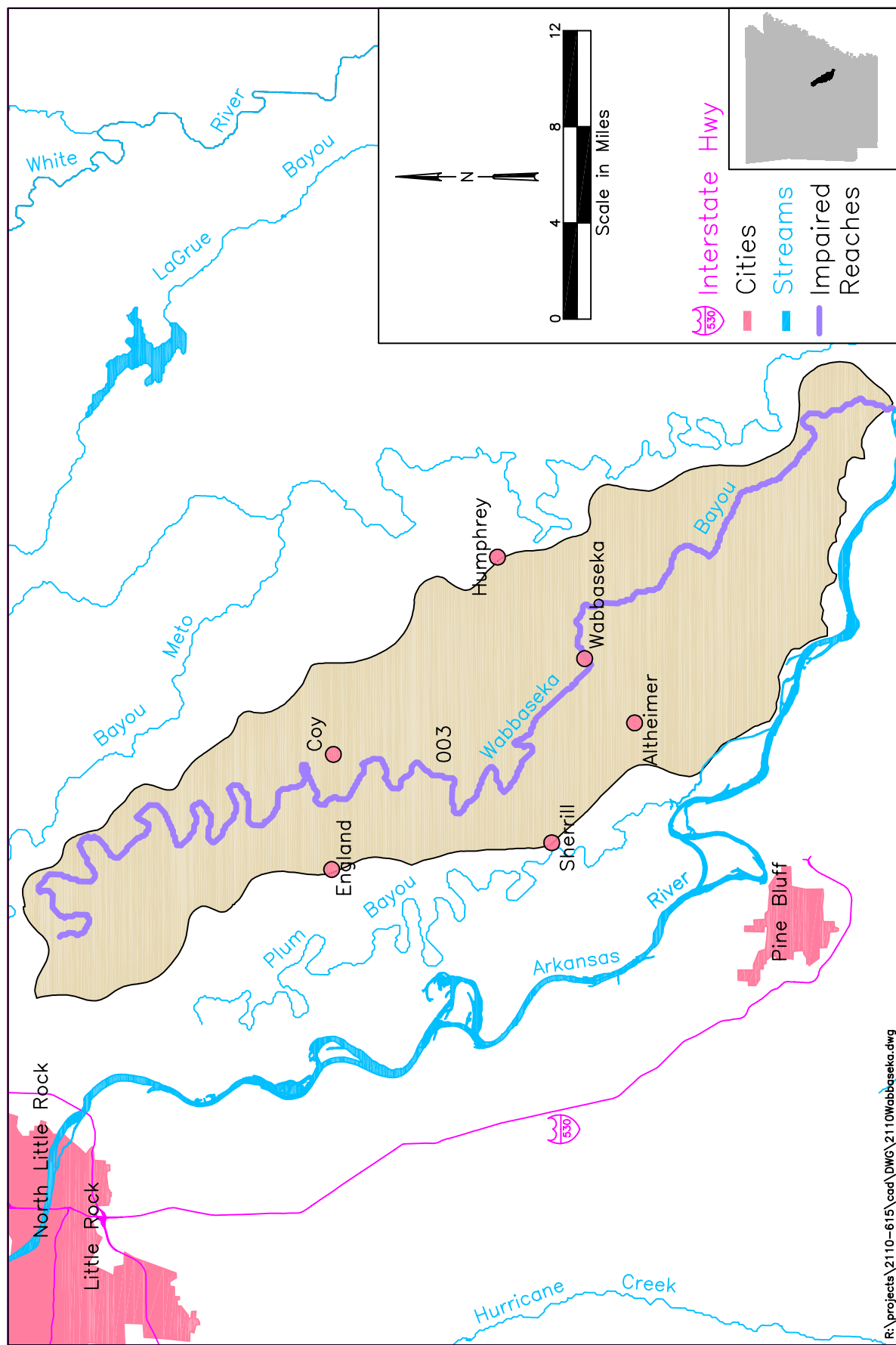


Figure A.1. Map of study area

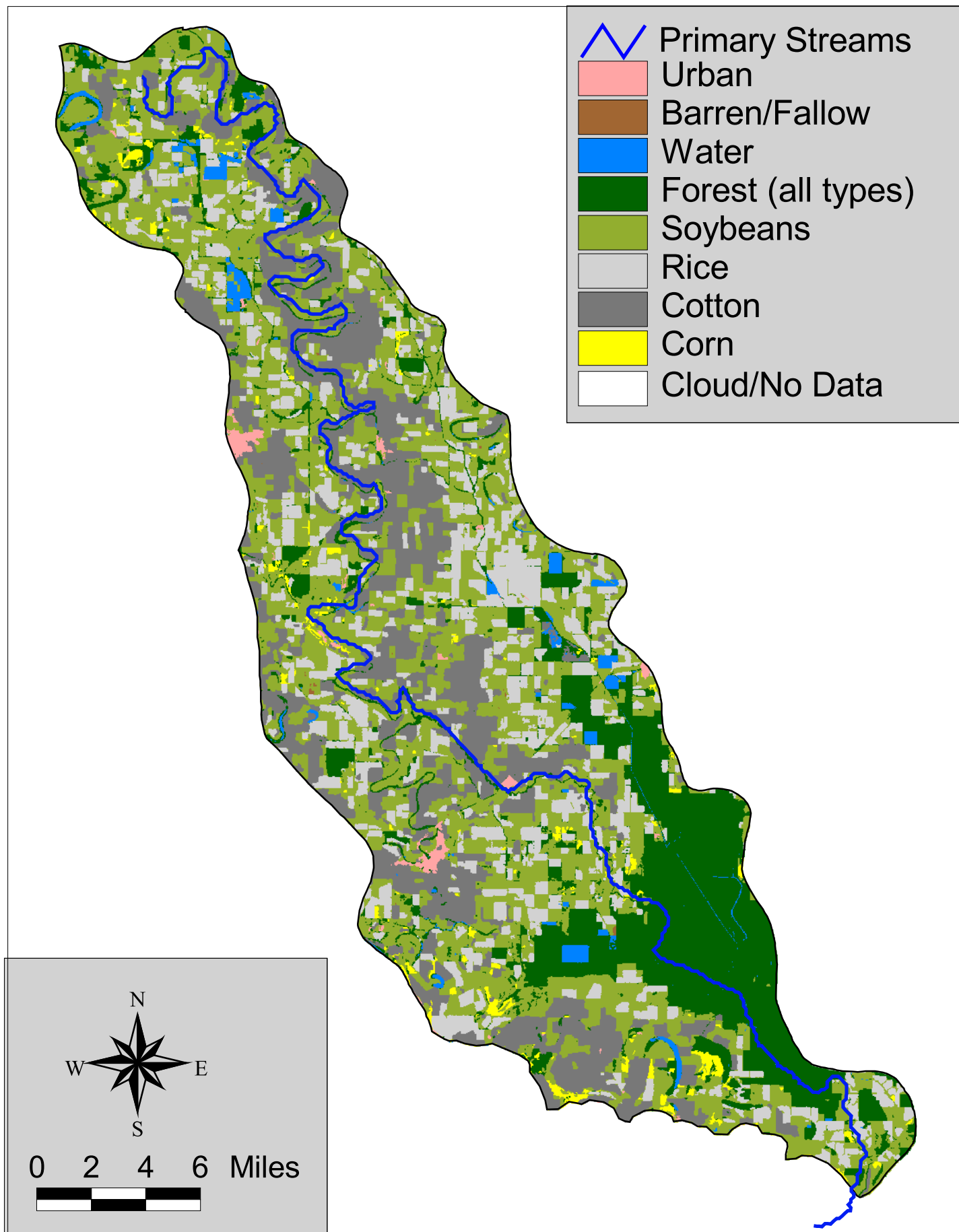


Figure A.2 Land use in Wabbaseka Bayou watershed.

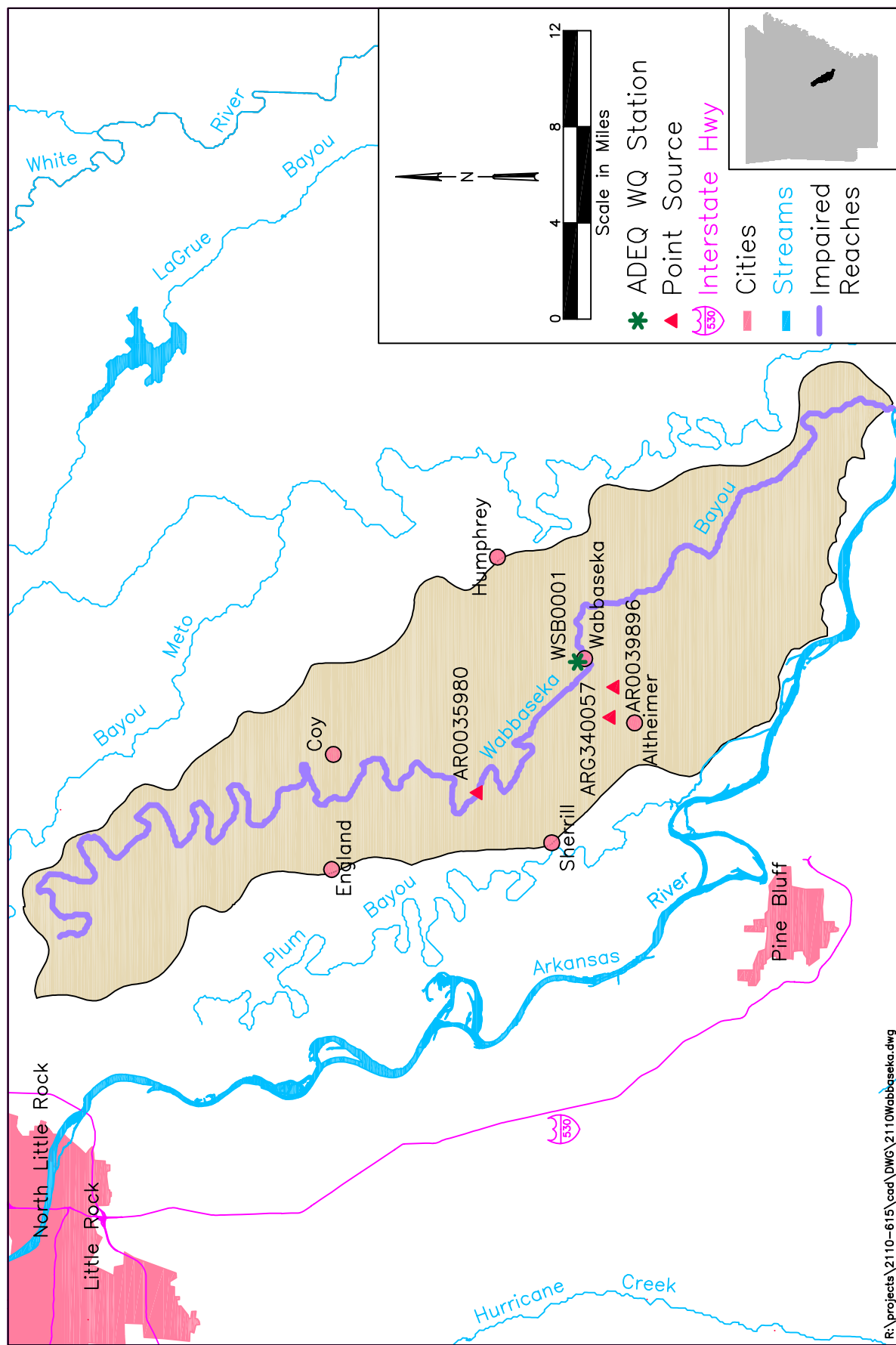


Figure A.3. Map of water quality stations and point sources in the study area

APPENDIX B

Long Term Plots of Turbidity and TSS

Table B.1. Observed TSS and Turbidity for Wabbaseka Bayou (WSB0001).

Date	Turbidity (NTU)	TSS (mg/L)	Flow at USGS (cfs)	Flow per unit area (cfs/mi ²)	load per unit area (lbs/day/mi ²)	Percent of days flow exceeded	Applicable Category	Applicable water quality standard (NTU)	Turbidity meeting base flow standard?	Turbidity meeting storm-flow standard?
5/15/2001	11	12	6.6	0.03	2.063	88.55%	Base flow	45	Yes	
9/11/2001	20	12.8	8.3	0.04	2.768	86.02%	Base flow	45	Yes	
11/7/2000	11	15	9.3	0.04	3.634	84.58%	Base flow	45	Yes	
10/4/1995	4.1	6	12.0	0.06	1.876	80.90%	Base flow	45	Yes	
7/17/1995	31	20	15.0	0.07	7.816	77.47%	Base flow	45	Yes	
9/13/1994	20	17	24.0	0.12	10.629	69.36%	Base flow	45	Yes	
6/9/1998	7.1		26.0	0.13		68.17%	Base flow	45	Yes	
7/16/2001	24	36	53.0	0.26	49.708	56.70%	Storm-flow	84		Yes
10/2/1996	34	14.5	90.0	0.43	33.999	48.65%	Storm-flow	84		Yes
4/10/1995	37	12	106.0	0.51	33.139	45.90%	Storm-flow	84		Yes
2/28/1996	165	32.5	119.0	0.57	100.759	44.02%	Storm-flow	84		No
1/16/1995	66	14	171.0	0.83	62.370	37.98%	Storm-flow	84		Yes
5/8/1996	204		173.0	0.84		37.82%	Storm-flow	84		No
6/7/1994	30		180.0	0.87		37.17%	Storm-flow	84		Yes
1/23/2001	160	61.5	565.0	2.73	905.264	17.39%	Storm-flow	84		No
3/5/2001	240	38	1200.0	5.80	1188.000	5.38%	Storm-flow	84		No

Number exceeding applicable water quality standard for turbidity = 0 4
Total number of observations in each category = 7 9
Percent exceeding applicable water quality standard for turbidity = 0% 44%

FILE: R:\PROJECTS\2110-615\TECH\TMDL\WABASEKA\WABASEKA TMDL-DEC 2005.XLS

Figure B.1. Long Term TSS for Wabbaseka Bayou at Hwy 79 (WSB0001)

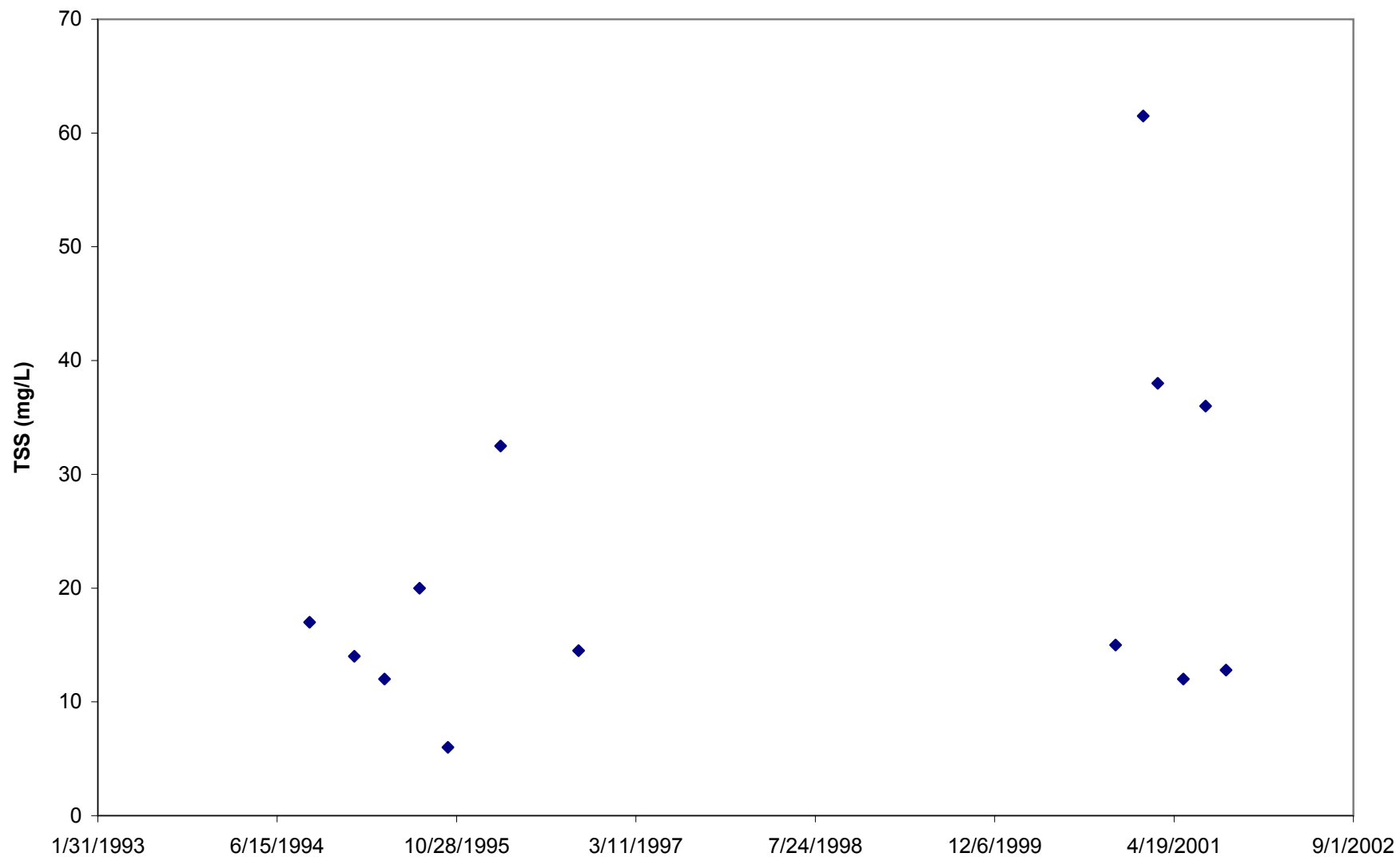
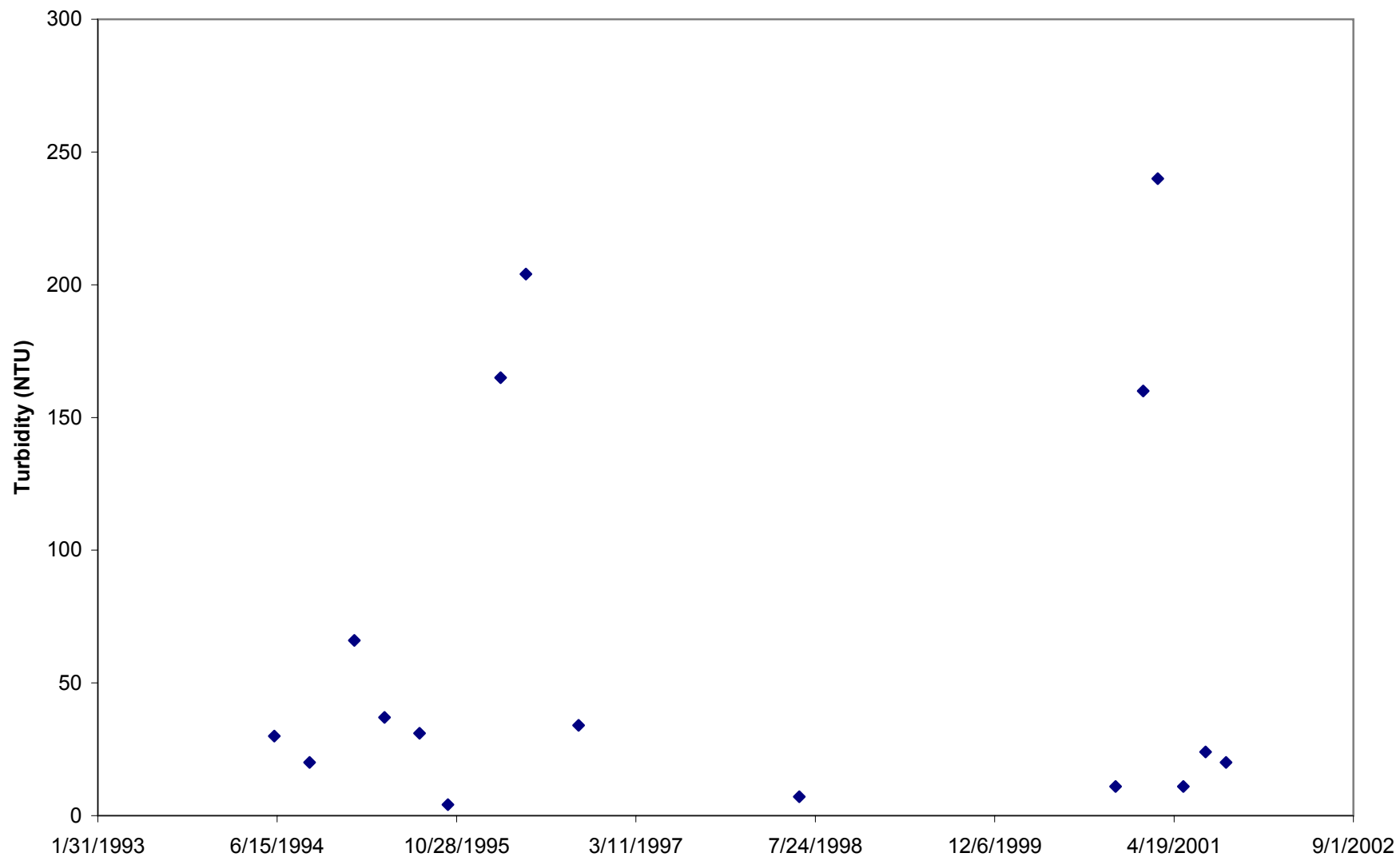


Figure B.2. Long Term Turbidity for Wabbaseka Bayou at Hwy 79 (WSB0001)



APPENDIX C

Seasonal Plots of Turbidity and TSS

Figure C.1. Seasonal TSS for Wabbaseka Bayou at Hwy 79 (WSB0001)

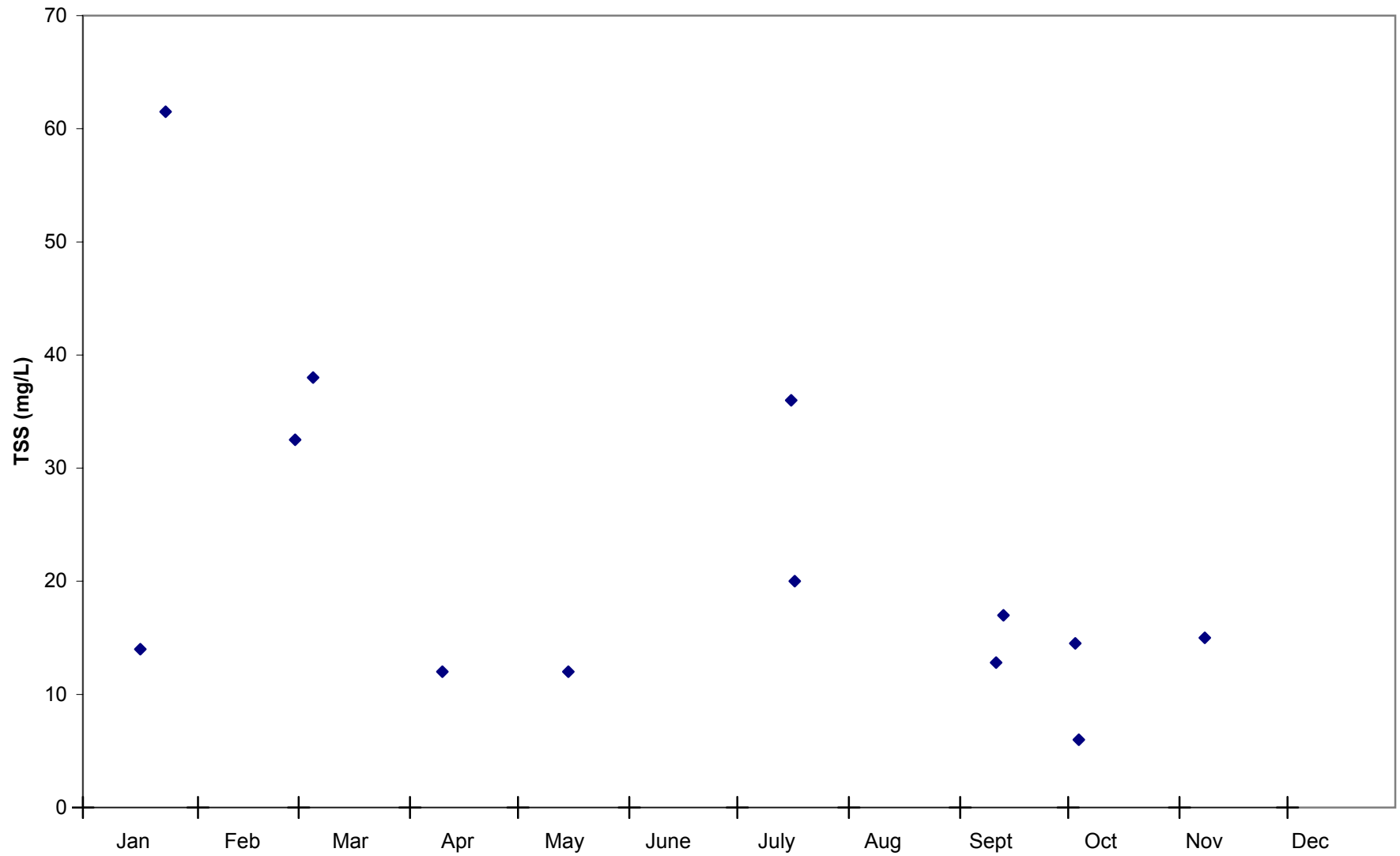
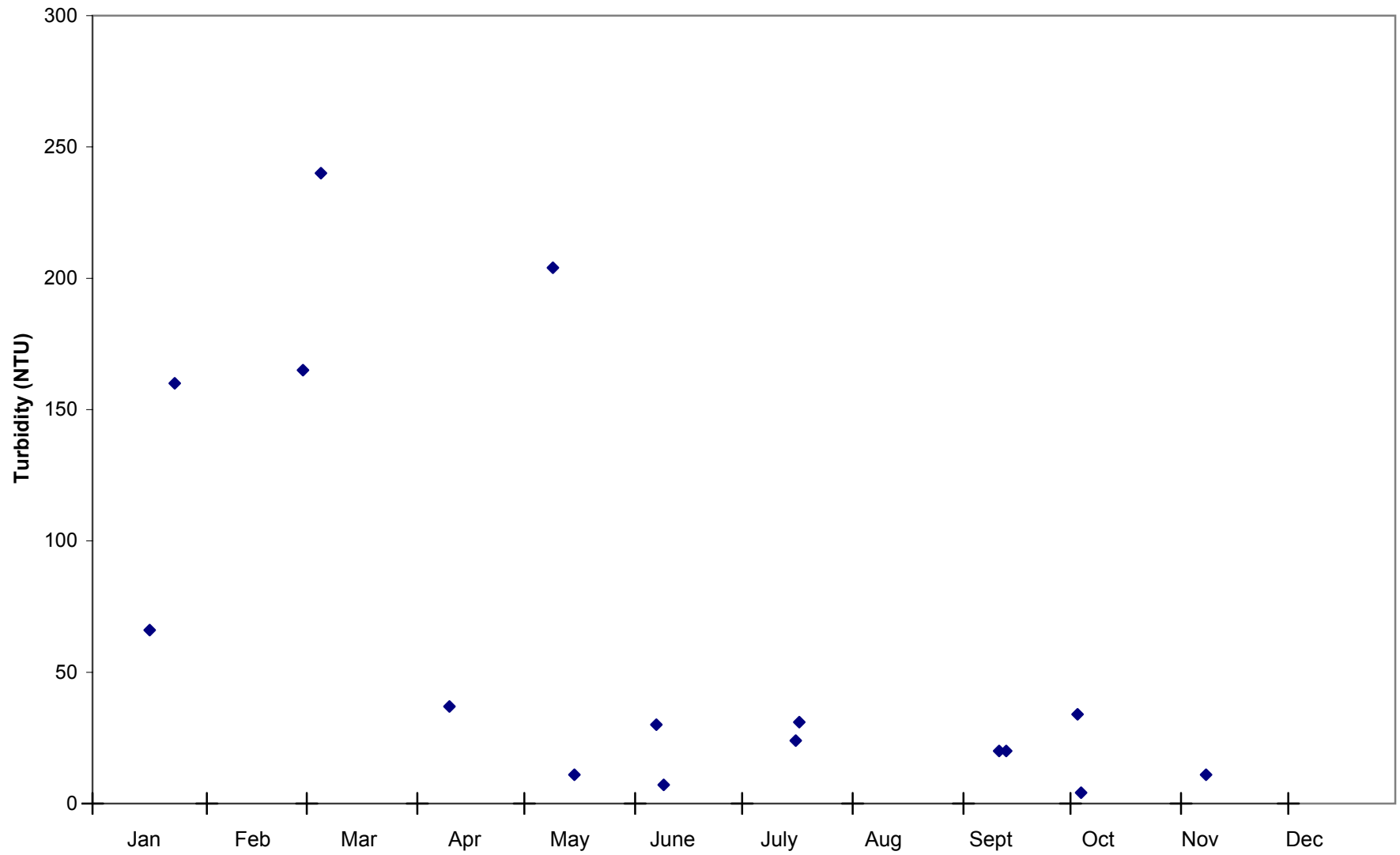


Figure C.2. Seasonal Turbidity for Wabbaseka Bayou at Hwy 79 (UWSB0001)



APPENDIX D

Plots of Turbidity and TSS vs Flow

Figure D.1. TSS vs flow for Wabbaseka Bayou at Hwy 79 (WSB0001)

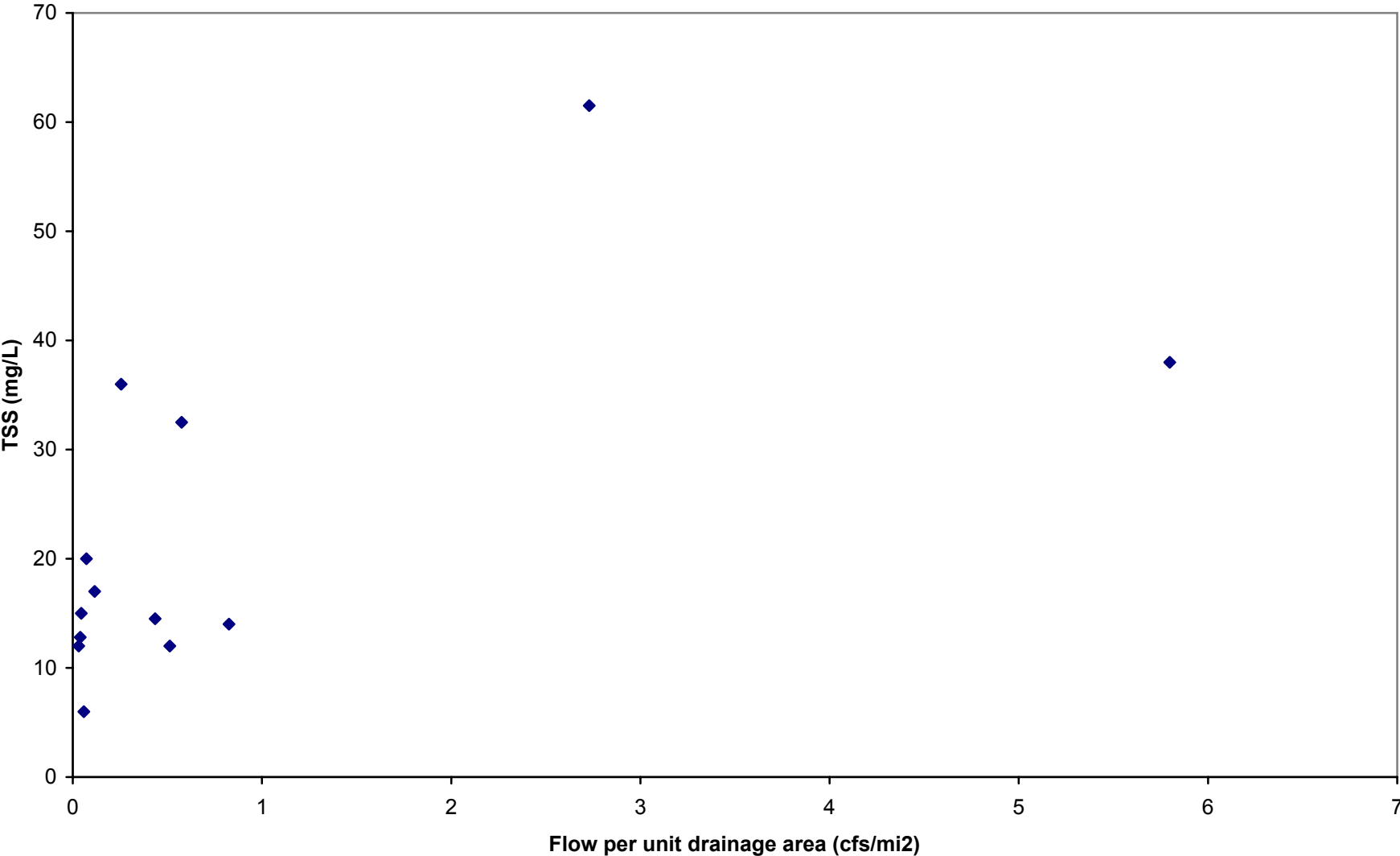
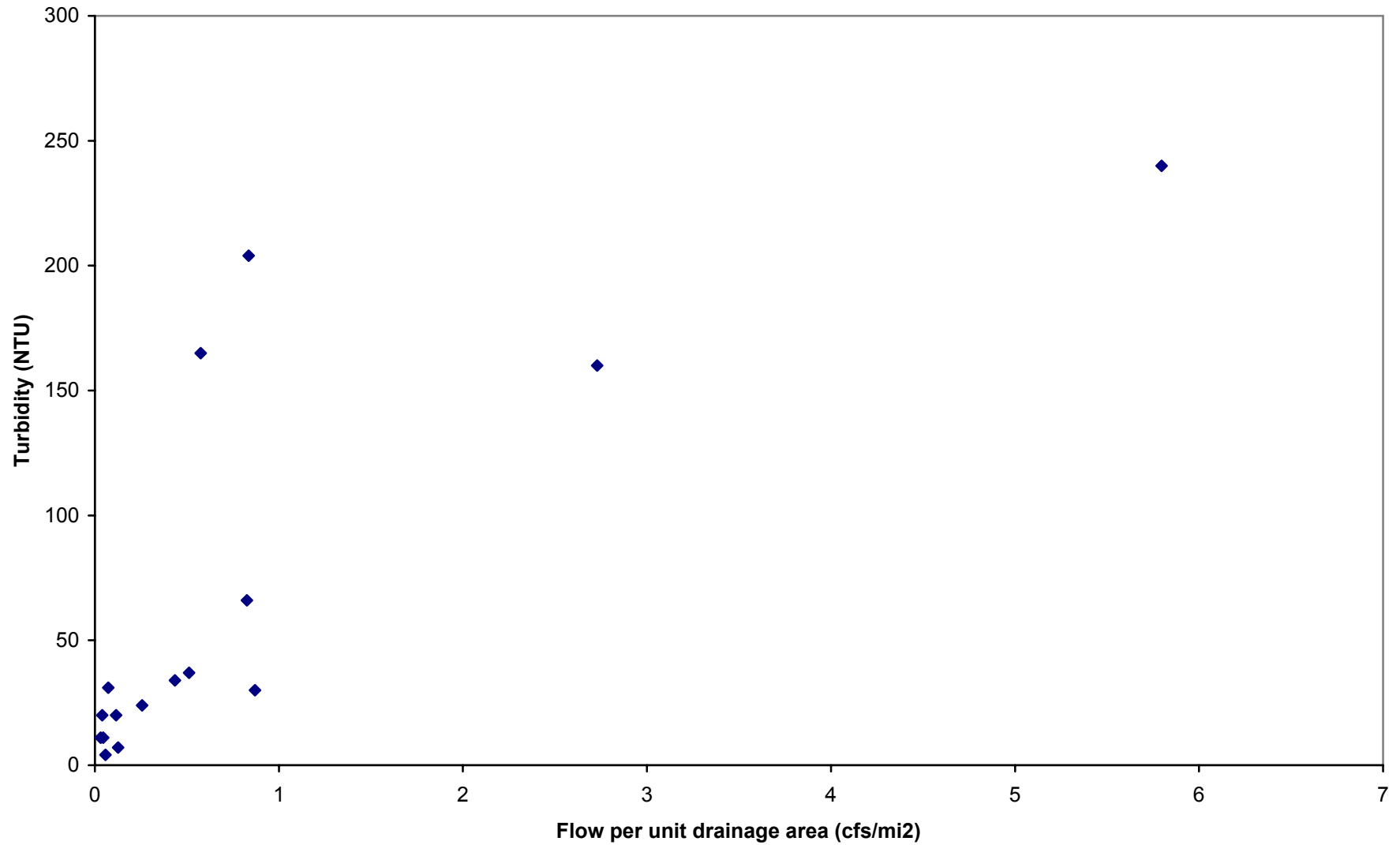


Figure D.2. Turbidity vs flow for Wabbaseka Bayou at Hwy 79 (WSB0001)



APPENDIX E

Plots of TSS vs Turbidity

Figure E.1. Base flow regression for TSS vs Turbidity for Wabbaseka Bayou (WSB0001)

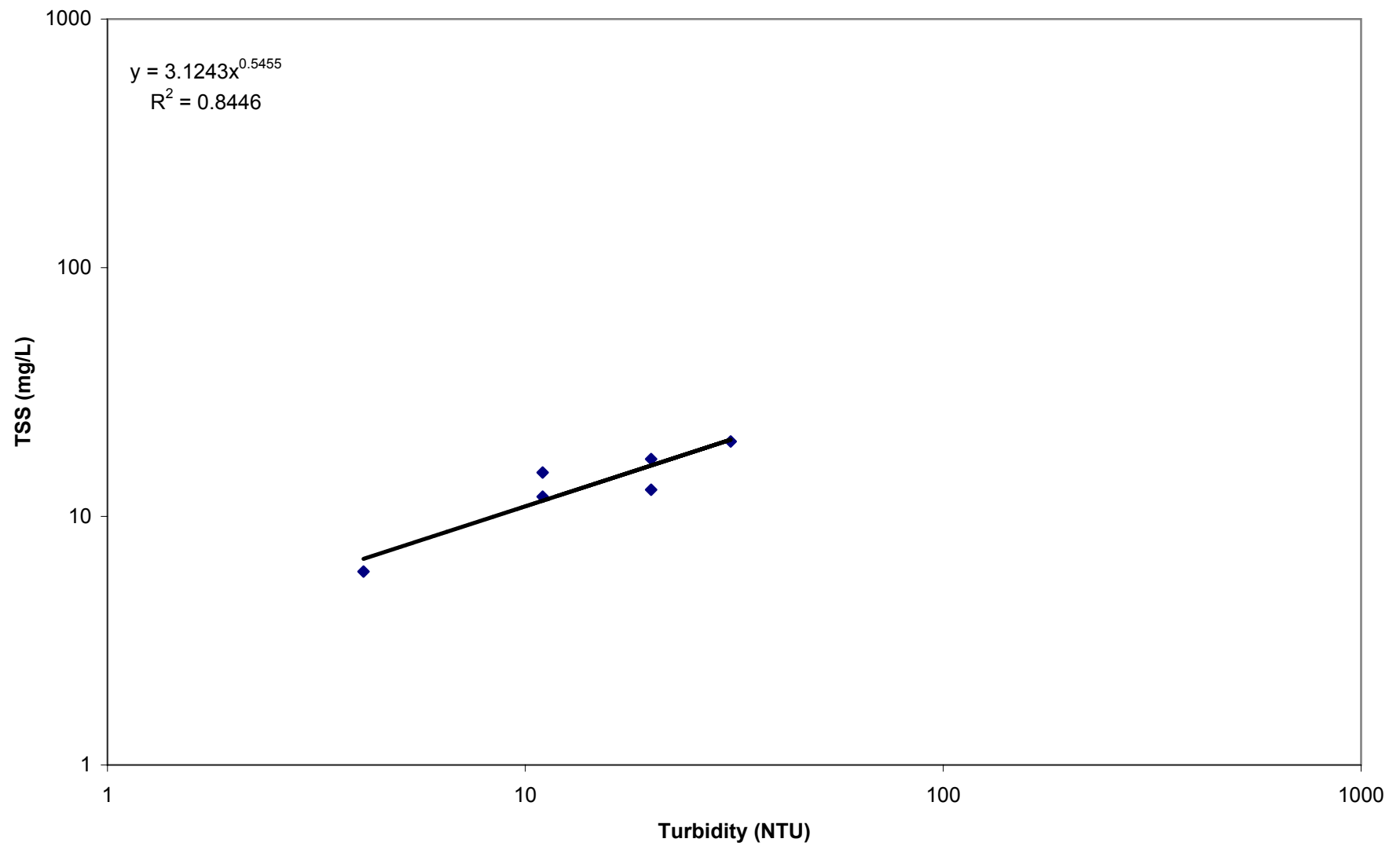
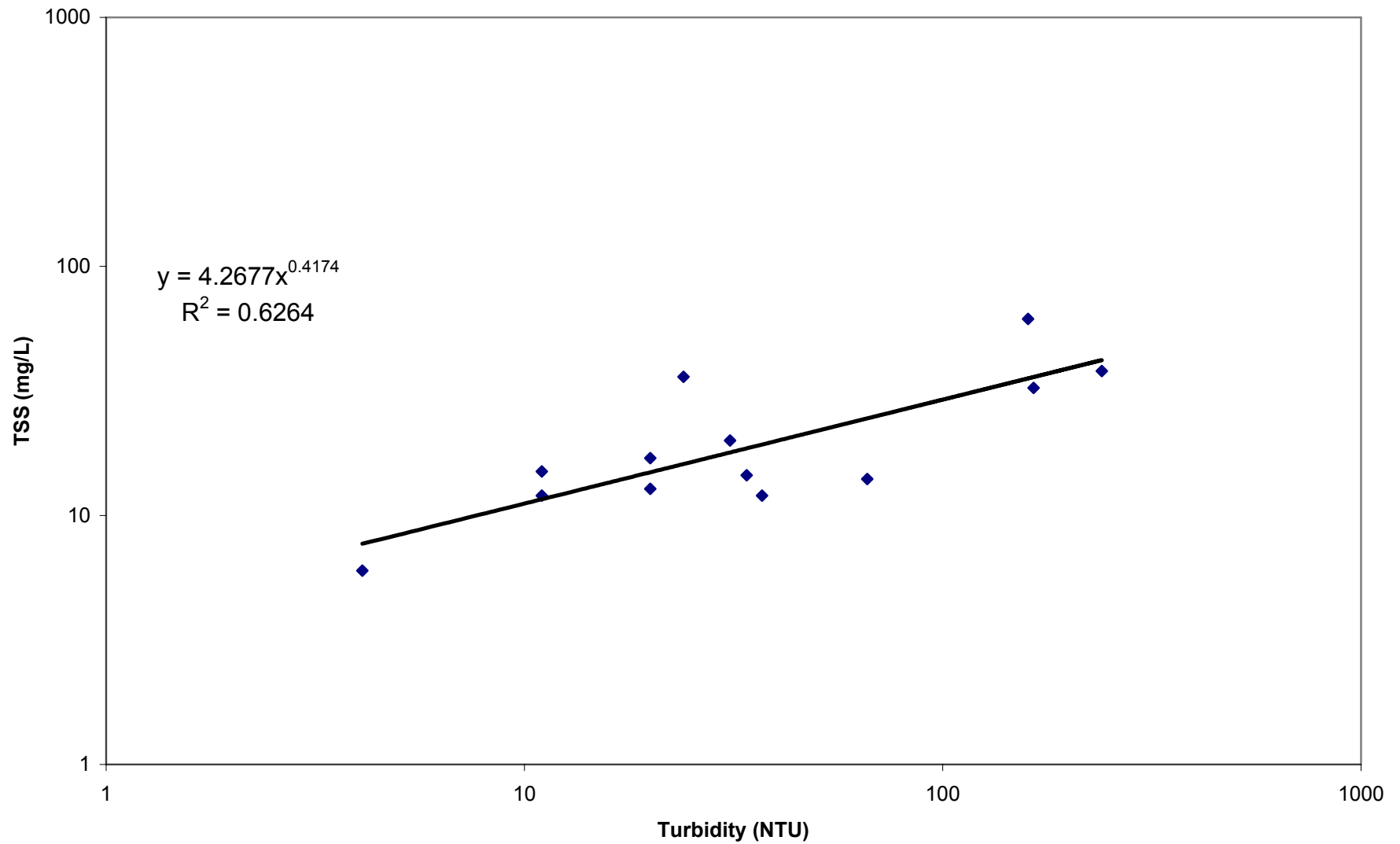


Figure E.2. Storm-flow regression for TSS vs Turbidity for Wabbaseka Bayou (WSB0001)



APPENDIX F

Load Duration Curves and TMDL Calculations

Figure F.1. Flow Duration Curve for Bayou Meto near Lonoke, AR (USGS 07264000)

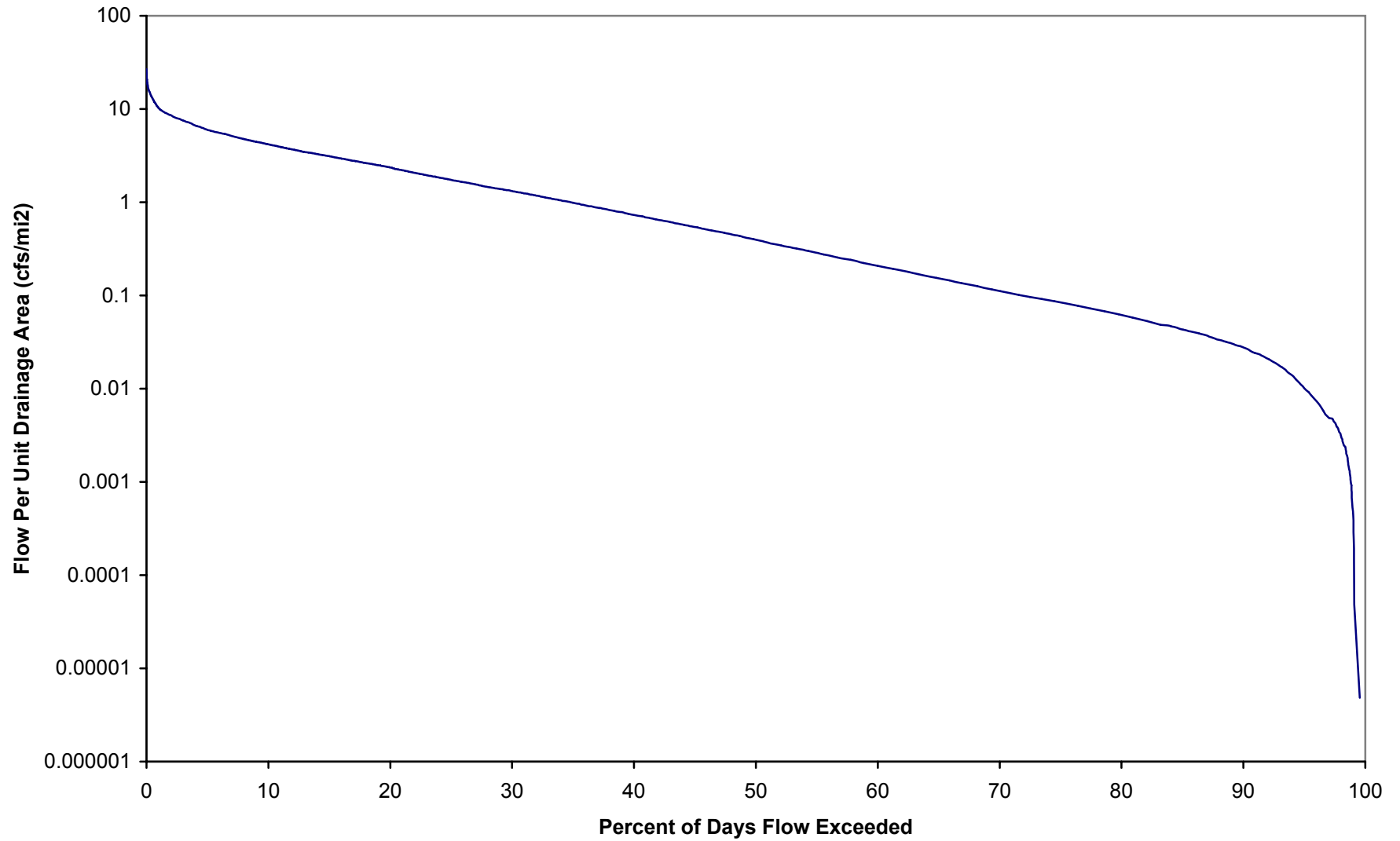


Figure F.2. Storm-flow Load Duration Curve for Bayou Wabbaseka (WSB0001)

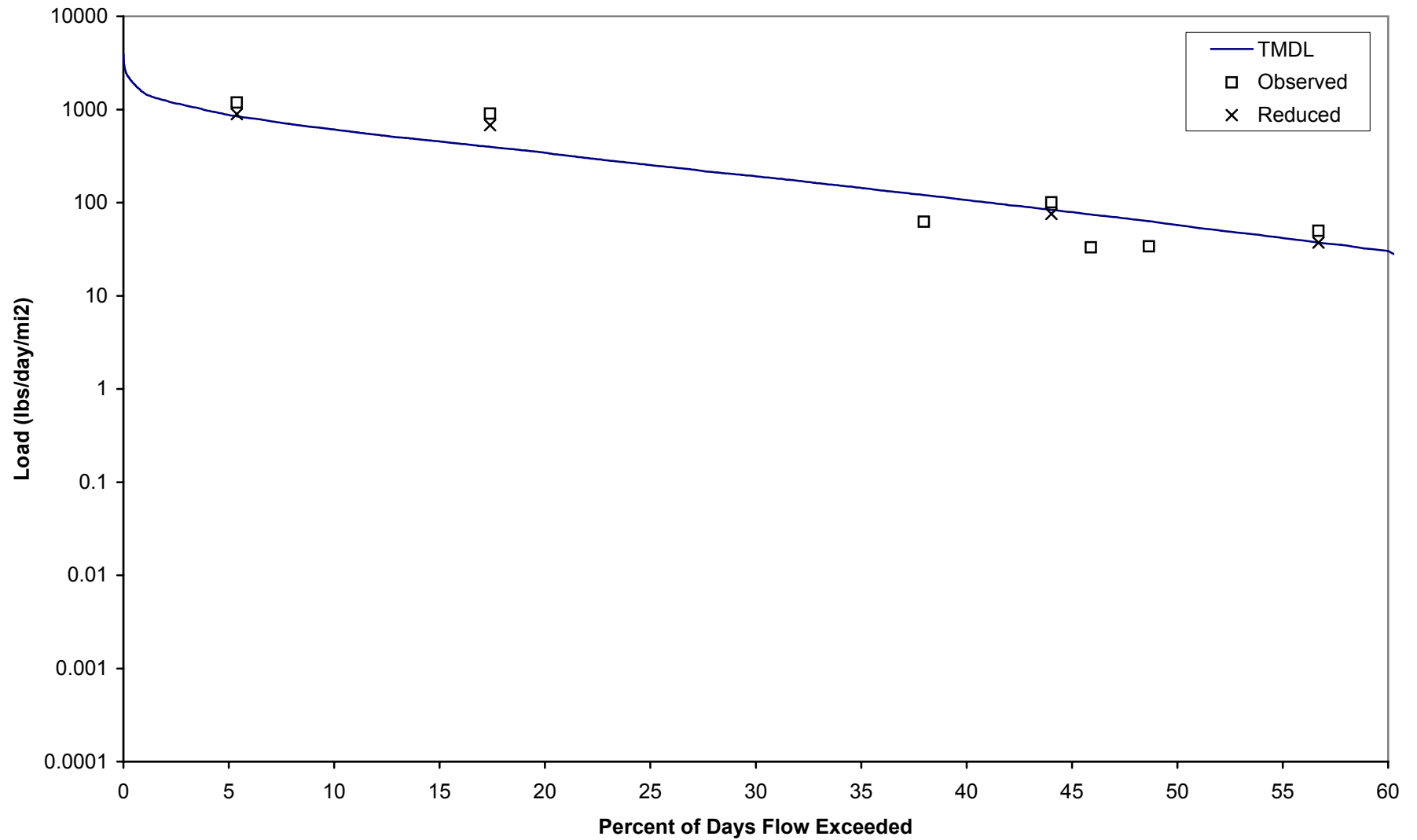


Figure F.3. Base Flow Load Duration Curve for Wabbaseka Bayou (WSB0001)

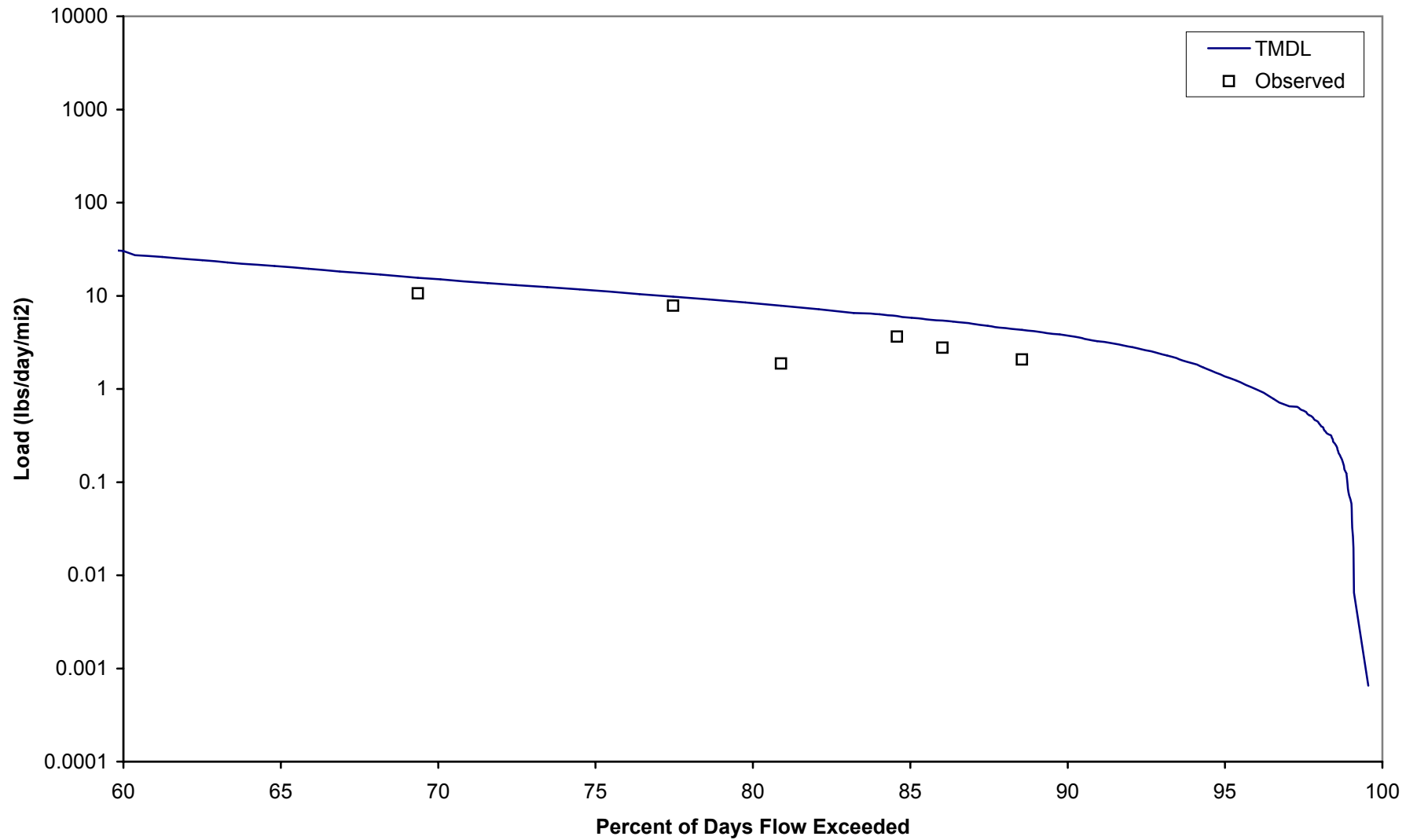


Table F.1. Calculations for allowable load per unit area for Wabbaseka Bayou.
drainage area at USGS flow gage = 207 mi² (Bayou Meto Near Lonoke)

Date	Flow at gage (cfs)	Flow per unit area (cfs/mi ²)	Percent of days flow exceeded	Category for WQ Standard	WQ Standard (NTU)	WQ Target TSS (mg/L)	Allowable TSS load (lbs/day/mi ²)
10/10/1954	0.001	0.000	99.56%	Base flow	45	25	6.51E-04
10/11/1954	0.001	0.000	99.56%	Base flow	45	25	6.51E-04
10/18/1954	0.001	0.000	99.56%	Base flow	45	25	6.51E-04

The rows between 99.56 and 80.90 percent flow exceedances are not shown for the sake of brevity.

10/1/2001	12	0.058	80.90%	Base flow	45	25	7.82E+00
7/30/2002	12	0.058	80.90%	Base flow	45	25	7.82E+00
9/28/2002	12	0.058	80.90%	Base flow	45	25	7.82E+00

The rows between 80.90 and 60.37 percent flow exceedances are not shown for the sake of brevity.

12/24/1999	42	0.203	60.37%	Base flow	45	25	2.74E+01
5/16/2000	42	0.203	60.37%	Base flow	45	25	2.74E+01
6/11/2002	42	0.203	60.37%	Base flow	45	25	2.74E+01
5/16/1955	43	0.208	59.99%	Storm-flow	84	27	3.02E+01
6/28/1957	43	0.208	59.99%	Storm-flow	84	27	3.02E+01
8/31/1957	43	0.208	59.99%	Storm-flow	84	27	3.02E+01

The rows between 59.99 and 30.03 percent flow exceedances are not shown for the sake of brevity.

12/20/1993	272	1.314	30.03%	Storm-flow	84	27	1.91E+02
3/21/1995	272	1.314	30.03%	Storm-flow	84	27	1.91E+02
4/14/1999	272	1.314	30.03%	Storm-flow	84	27	1.91E+02

The rows between 30.03 and 0.01 percent flow exceedances are not shown for the sake of brevity.

12/31/1987	5080	24.541	0.01%	Storm-flow	84	27	3.57E+03
12/30/1987	5530	26.715	0.01%	Storm-flow	84	27	3.89E+03
12/29/1987	5570	26.908	0.00%	Storm-flow	84	27	3.92E+03

Flow per unit area in middle of base flow range (80% exceedance) =	0.058	cfs/mi ²
Cumulative drainage area at downstream end of reach 003 =	462	mi ²
Flow at downstream end of reach 003 for base flow conditions =	26.8	cfs
Target TSS for base flow conditions for reach 003 =	25	mg/L
Allowable TSS load for base flow conditions for reach 003 =	1.81	tons/day

Flow per unit area in middle of stormwater range (30% exceedance) =	1.31	cfs/mi ²
Cumulative drainage area at downstream end of reach 003 =	462	mi ²
Flow at downstream end of reach 003 for stormwater conditions =	607.1	cfs
Target TSS for stormwater conditions for reach 003 =	27	mg/L
Allowable TSS load for stormwater conditions for reach 003 =	44.2	tons/day

FILE: R:\PROJECTS\2110-615\TECH\TMDL\WABASEKA\WABASEKA TMDL-DEC 2005.XLS

TABLE F.2. CALCULATIONS FOR PERCENT REDUCTION FOR STORM-FLOW CONDITIONS
FOR WABBASEKA BAYOU (WSB0001)

Storm-flow target TSS conc. = 27 mg/L
 Percent reduction needed = 25%
 Error check for reduction is / is not needed: ok
 Error check for less or more reduction needed: ok

<u>Category</u>	<u>Date</u>	<u>Observed TSS at WSB0001 (mg/L)</u>	<u>Flow per unit area on sampling day (cfs/mi2)</u>	<u>Percent exceedance for flow on sampling day</u>	<u>Current TSS load (lbs/day)/mi2</u>	<u>Reduced TSS load (lbs/day)/mi2</u>	<u>Allowable TSS load (lbs/day)/mi2</u>	<u>Reduced load less than or equal to allow. load?</u>
Storm-flow	7/16/2001	36	0.256	56.70%	49.7	37.3	37.3	Yes
Storm-flow	10/2/1996	14.5	0.435	48.65%	34.0	25.5	63.3	Yes
Storm-flow	4/10/1995	12	0.512	45.90%	33.1	24.9	74.6	Yes
Storm-flow	2/28/1996	32.5	0.575	44.02%	100.8	75.6	83.7	Yes
Storm-flow	1/16/1995	14	0.826	37.98%	62.4	46.8	120.3	Yes
Storm-flow	1/23/2001	61.5	2.729	17.39%	905.3	678.9	397.4	No
Storm-flow	3/5/2001	38	5.797	5.38%	1188.0	891.0	844.1	No

Total number of values = 7
 Allowable % of exceedances = 20%
 Allowable no. of exceedances = 2
 No. of exceedances before reductions = 4
 No. of exceedances after reductions = 2

FILE: R:\PROJECTS\2110-615\TECH\TMDL\WABASEKA\WABASEKA TMDL-DEC 2005.XLS

TABLE F.3. CALCULATIONS FOR PERCENT REDUCTION FOR BASE FLOW CONDITIONS
FOR WABBASEKA BAYOU (WSB0001)

Base flow target TSS conc. = 25 mg/L
 Percent reduction needed = 0%
 Error check for reduction is / is not needed: ok
 Error check for less or more reduction needed: ok

<u>Category</u>	<u>Date</u>	<u>Observed TSS at WSB0001 (mg/L)</u>	<u>Flow per unit area on sampling day (cfs/mi2)</u>	<u>Percent exceedance for flow on sampling day</u>	<u>Current TSS load (lbs/day)/mi2</u>	<u>Reduced TSS load (lbs/day)/mi2</u>	<u>Allowable TSS load (lbs/day)/mi2</u>	<u>Reduced load less than or equal to allow. load?</u>
Base flow	9/11/2001	12.8	0.040	86.02%	2.77	2.77	5.41	Yes
Base flow	5/15/2001	12	0.032	88.55%	2.06	2.06	4.30	Yes
Base flow	11/7/2000	15	0.045	84.58%	3.63	3.63	6.06	Yes
Base flow	10/4/1995	6	0.058	80.90%	1.88	1.88	7.82	Yes
Base flow	7/17/1995	20	0.072	77.47%	7.82	7.82	9.77	Yes
Base flow	9/13/1994	17	0.116	69.36%	10.63	10.63	15.63	Yes

Total number of values = 6
 Allowable % of exceedances = 25%
 Allowable no. of exceedances = 2
 No. of exceedances before reductions = 0
 No. of exceedances after reductions = 0

FILE: R:\PROJECTS\2110-615\TECH\TMDL\WABASEKA\WABASEKA TMDL-DEC 2005.XLS